

Oyama College		Year	2022	Course Title	Laboratory of Enviroment Energy Engineering
Course Information					
Course Code	0105		Course Category	Specialized / Elective	
Class Format	Experiment / Practical training		Credits	Academic Credit: 2	
Department	Department of Innovative Electrical and Electronic Engineering		Student Grade	5th	
Term	First Semester		Classes per Week	2	
Textbook and/or Teaching Materials					
Instructor	WATANABE Tatsuo,TANAKA Akio,Xiaoyang Li				
Course Objectives					
The goals of this course are to					
・ Be able to explain the contents of basic experiments, measurements, and evaluation methods for each theme.					
・ Be able to operate the experimental equipment correctly and carry out the experiments of each theme correctly.					
・ Be able to evaluate the results obtained and consider problems and solutions.					
Rubric					
	Ideal Level		Standard Level		Unacceptable Level
Achievement 1	The student can accurately explain the basic experiment, measurement, and evaluation methods for each theme.		The student can explain the basic experiment, measurement, and evaluation methods for each theme. for each theme.		The student can't explain the basic experiment, measurement, and evaluation methods for each theme. for each theme.
Achievement 2	The student can operate the experimental equipment correctly and carry out experiments on each theme correctly and accurately.		The student can operate the experimental equipment correctly and carry out experiments on each theme correctly.		The student can't operate the experimental equipment correctly and can't carry out experiments on each theme correctly.
Achievement 3	The student can evaluate the results obtained and consider problems and solutions from various perspectives.		The student can evaluate the results obtained and consider and propose problems and solutions.		The student can't evaluate the results obtained and can't consider problems and solutions.
Assigned Department Objectives					
学習・教育到達度目標 ②					
JABEE (B) JABEE (d-2) JABEE (d-3) JABEE (e) JABEE (h) JABEE (i)					
Teaching Method					
Outline	This is an experimental subject for students assigned to the Environmental Symbiosis Energy Course. This subject is a required subject.				
Style	Reports will be given before and after the experiment. Nine experiments will be conducted in each group. No., Theme name, Weekly, instructor 1. Radiation measurement, 2 weeks, Watanabe 2. Characteristic measurement of three-phase winding type induction motor, 1 week, LI 3. Characteristic measurement of three-phase synchronous generator, 1 week, LI 4. Measurement of DC motor characteristics, 1 week, LI 5. Measurement of characteristics of three-phase transformer, 1 week,,LI 6. Light spectrum and interference, 2 weeks, Watanabe 7. Evaluation of optical and electrical characteristics of transparent electrode material, 2 weeks, Tanaka 8. Characteristic measurement of grid interconnection protection relay device, 1 week, Tanaka 9. Characteristic measurement of commercial frequency high voltage test, 1 week, Tanaka				
Notice	All reports must be submitted. The evaluation average of each experiment report is used as the evaluation. In the evaluation, it is a prerequisite that all the experiment reports are submitted within the written deadline. Before the experiment of each theme is carried out, prepare enough. If you do not participate in the experiment, you will experiment individually at a later date.				
Characteristics of Class / Division in Learning					
<input type="checkbox"/> Active Learning		<input type="checkbox"/> Aided by ICT		<input type="checkbox"/> Applicable to Remote Class	
				<input type="checkbox"/> Instructor Professionally Experienced	
Course Plan					
			Theme	Goals	
1st Semester	1st Quarter	1st	Guidance [Akio Tanaka]	・ Understand the contents and precautions of each experiment ・ Prepare for the radiation measurement (1) experiment	
		2nd	Radiation measurement (1) [Tatsuo Watanabe]	・ Understand the purpose, principle, and experimental results of radiation measurement ・ Prepare for the radiation measurement (2) experiment	
		3rd	Radiation measurement (2) [Tatsuo Watanabe]	・ Understand the purpose, principle, and experimental results of radiation measurement ・ Prepare for how to measure the characteristics of a three-phase winding induction motor.	
		4th	Characteristic measurement of three-phase winding type induction motor [LI XIAOYANG]	・ Understand the purpose, principle, and experimental results of characteristic measurement of three-phase winding type induction machines. ・ Prepare for how to measure the characteristics of a three-phase synchronous generator.	

		5th	Characteristic measurement of three-phase synchronous generator [LI XIAOYANG]	<ul style="list-style-type: none"> Understand the purpose, principle, and experimental results of characteristic measurement of a three-phase synchronous machine. Prepare for how to measure the characteristics of DC motors.
		6th	Measurement of DC motor characteristics [LI XIAOYANG]	<ul style="list-style-type: none"> Understand the purpose, principle, and experimental results of characteristic measurement of DC motors Prepare for how to measure the characteristics of a three-phase transformer.
		7th	Measurement of characteristics of three-phase transformer [LI XIAOYANG]	<ul style="list-style-type: none"> Understand the purpose, principle, and experimental results of characteristic measurement of three-phase transformers Prepare for light spectrum and interference (1)
		8th	Light spectrum and interference (1) [Tatsuo Watanabe]	<ul style="list-style-type: none"> Understand the spectrum of light and the purpose, principle, and experimental results of interference Prepare for light spectrum and interference (2)
	2nd Quarter	9th	Light spectrum and interference (2) [Tatsuo Watanabe]	<ul style="list-style-type: none"> Understand the spectrum of light and the purpose, principle, and experimental results of interference Prepare for the evaluation (1) of the optical and electrical characteristics of transparent electrode materials.
		10th	Evaluation of optical and electrical characteristics of transparent electrode materials (1) [Akio Tanaka]	<ul style="list-style-type: none"> Understand the purpose, principle, and experimental results of evaluating the optical and electrical properties of transparent electrode materials. Prepare for the evaluation (2) of the optical and electrical characteristics of transparent electrode materials.
		11th	Evaluation of optical and electrical characteristics of transparent electrode materials (2) [Akio Tanaka]	<ul style="list-style-type: none"> Understand the purpose, principle, and experimental results of evaluating the optical and electrical properties of transparent electrode materials. Prepare for the measurement method of the characteristics of the grid interconnection protection relay device.
		12th	Characteristics measurement of grid interconnection protection relay device [Akio Tanaka]	<ul style="list-style-type: none"> Understand the purpose, principle, and experimental results of characteristic measurement of grid interconnection protection relay devices. Prepare for commercial frequency high voltage test
		13th	Characteristic measurement of commercial frequency high voltage test [Akio Tanaka]	<ul style="list-style-type: none"> Understand the purpose, principle, and experimental results of characteristic measurement of commercial frequency high voltage test
		14th	Report creation [Tatsuo Watanabe, Akio Tanaka, LI XIAOYANG]	<ul style="list-style-type: none"> Understand how to create a report based on the experimental results
		15th	Report creation [Tatsuo Watanabe, Akio Tanaka, LI XIAOYANG]	<ul style="list-style-type: none"> Understand how to create a report based on the experimental results
		16th		

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	0	0	0	0	0	100	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	0	0	0	0	0	100	100
Cross Area Proficiency	0	0	0	0	0	0	0